

Serial No. 10/657,179

Docket No. MRE-0063

Amtd. dated July 5, 2006

Reply to Office Action of April 6, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A device for compensating for heat generation in a modular IC test handler configured to receive cooling fluid from an exterior source and spray the cooling fluid onto modular ICs during testing, wherein the device is attached to a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame for pushing edges of modular ICs mounted on carriers to connect the modular ICs to test sockets, the device comprising:

~~at least one a pair of supporting member members~~ provided adjacent to the press unit ~~and, each of the pair of supporting members~~ having a cooling fluid flow passage formed therein for flow of cooling fluid; and

at least one cooling fluid spraying unit extending between the pair of supporting members configured to be in fluid communication with the pair of supporting members so as to spray the cooling fluid supplied through the cooling fluid flow ~~passage passages~~ toward faces of modular ICs in an oblique direction with respect to a central plane of the at least one cooling fluid spraying unit.

2. (Original) The device as claimed in claim 1, wherein the at least one cooling fluid spraying unit comprises a plurality of cooling fluid spraying units.

3-4. (Canceled)

5. (Currently Amended) The device as claimed in claim ~~31~~, wherein the at least one cooling fluid spraying unit comprises a plurality of cooling fluid spraying units, ~~which each extend~~ extending between the pair of supporting members.

6. (Currently Amended) The device as claimed in claim ~~31~~, wherein each at least one cooling fluid spraying unit comprises:

a nozzle member having ends connected to the cooling fluid flow passages in the pair of supporting members so as to be in communication therewith and arranged between adjacent push bars, the nozzle member having at least one cooling fluid spraying hole.

7. (Original) The device as claimed in claim 6, wherein the nozzle member comprises a plurality of cooling fluid spray holes formed at fixed intervals in a longitudinal direction of the nozzle member and directed away in a circumferential direction from a central plane the nozzle member forms, and wherein the plurality of cooling fluid spray holes is

configured to spray the cooling fluid guided through the nozzle member toward the modular ICs in an oblique direction.

8. (Original) The device as claimed in claim 7, wherein the plurality of cooling fluid spray holes are arranged in a plurality of pairs.

9. (Currently Amended) The device as claimed in claim 1, wherein the cooling fluid flow passage in each of the ~~at least one pair of supporting member members~~ is divided into a plurality of fluid flow passages by at least one partition extending in a lateral direction.

10. (Currently Amended) The device as claimed in claim 9, wherein the cooling fluid flow passage in each of the ~~at least one pair of supporting member members~~ includes three cooling fluid flow passages divided by two partitions, respectively.

11. (Original) The device as claimed in claim 10, wherein the three passages comprise an upper flow passage, a middle flow passage, and a lower flow passage, and wherein the upper flow passage is in communication with end portions of the nozzle members and the lower flow passage has an inlet configured to receive the cooling fluid from an exterior.

12. (Original) The device as claimed in claim 11, wherein the at least one cooling fluid spraying unit each comprises a nozzle member, and wherein the partitions have a plurality of connection holes provided at fixed intervals for flow of the cooling fluid introduced thereto through the lower flow passage, the middle flow passage, and the upper flow passage.

13. (Original) The device as claimed in claim 12, wherein ends of the nozzle members and the connection holes in the partitions are staggered with respect to one another.

14. (Previously Presented) A device for compensating for heat generation in a modular IC test handler configured to receive cooling fluid from an exterior source and spray the cooling fluid onto modular ICs during testing, wherein the device is attached to a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame for pushing edges of modular ICs mounted on carriers to connect the modular ICs to test sockets, the device comprising:

a pair of supporting members provided adjacent to the press unit, each having a cooling fluid flow passage formed therein for flow of cooling fluid, wherein each supporting member comprises:

a lower supporting member having a plurality of pass through holes formed at fixed intervals; and

an upper supporting member joined to an upper portion of the lower supporting member and having pass through holes provided at positions corresponding to the pass through holes in the lower supporting member, wherein a sealing device is provided between each of the pass through holes in the lower supporting member and each of the pass through holes in the upper supporting member; and

at least one cooling fluid spraying unit configured to spray the cooling fluid supplied through the cooling fluid flow passage toward faces of modular ICs in an oblique direction with respect to a central plane of the at least one cooling fluid spraying unit, wherein the at least one cooling fluid spraying unit comprises a nozzle member having ends connected to the cooling fluid flow passages in the pair of supporting members so as to be in communication therewith and arranged between adjacent push bars, the nozzle member having a plurality of cooling fluid spray holes formed at fixed intervals in a longitudinal direction of the nozzle member and directed away in a circumferential direction from a central plane the nozzle member forms, and wherein an upper portion of each of the pair of supporting members is attached to one end of each of the nozzle members.

15. (Original) The device as claimed in claim 14, wherein the sealing device is an elastic sealing ring.

16. (Original) The device as claimed in claim 15, wherein the sealing ring is formed of silicone.

17. (Original) The device as claimed in claim 14, wherein the end portion of each of the nozzle members has a groove for receiving therein a portion of the sealing device.

18. (Currently Amended) The device as claimed in claim 1, wherein the ~~at least one pair of supporting member is~~ members are arranged in parallel to the press unit.

19. (Currently Amended) The device as claimed in claim 1, wherein each of the ~~at least one pair of supporting member~~ members comprises an inlet in communication with a source of cooling fluid.

20. (Previously Presented) The device as claimed in claim 1, wherein the at least one cooling fluid spraying unit comprises a plurality of cooling fluid spray units, each comprising a nozzle member configured to be interposed between respective push bars of the press unit and extending parallel thereto.

21. (Currently Amended) A modular IC test handler, comprising:
- a plurality of test sockets;
 - a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame for pushing edges of modular ICs mounted on carriers to connect the modular ICs to the plurality of test sockets; and
 - a device for compensating for heat generation from the modular ICs during testing, the device comprising:
 - ~~at least one~~ a pair of supporting member members provided adjacent to the press unit ~~and, each of the pair of supporting members~~ having a cooling fluid flow passage formed therein for flow of cooling fluid; and
 - at least one cooling fluid spraying unit extending between the pair of supporting members and configured to be in fluid communication with each of the pair of supporting members so as to spray the cooling fluid supplied through the cooling fluid flow ~~passage passages~~ toward faces of modular ICs in an oblique direction with respect to a central plane of the at least one cooling fluid spraying unit.
22. (Original) The device as claimed in claim 21, wherein the at least one cooling fluid spraying unit comprises a plurality of cooling fluid spraying units.

23. (Canceled)

24. (Currently Amended) The device as claimed in claim ~~23~~21, wherein ~~each of the~~ at least one cooling fluid spraying unit comprises:

a nozzle member having ends connected to the cooling fluid flow passages in the ~~at least one pair~~ of supporting members so as to be in communication therewith and arranged between adjacent push bars, each nozzle member having at least one cooling fluid spraying hole.

25. (Previously Presented) The device as claimed in claim 24, wherein the nozzle member comprises a plurality of cooling fluid spray holes formed at fixed intervals in a longitudinal direction of the nozzle member and directed away in a circumferential direction from a central plane the nozzle member forms, and wherein the plurality of cooling fluid spray holes are configured to spray the cooling fluid guided through the nozzle member toward the modular ICs in an oblique direction.

26. (Original) The device as claimed in claim 25, wherein the plurality of cooling fluid spray holes are arranged in a plurality of pairs.

27. (Currently Amended) The device as claimed in claim 21, wherein the cooling fluid flow passage in each of the ~~at least one pair of supporting member members~~ is divided into a plurality of cooling fluid flow passages by at least one partition extending in a lateral direction.

28. (Currently Amended) The device as claimed in claim 27, wherein the plurality of cooling fluid flow passages ~~comprise~~ comprises an upper flow passage, a middle flow passage, and a lower flow passage, and wherein the upper flow passage is in communication with end portions of a nozzle member of the at least one cooling fluid spray unit and the lower flow passage has an inlet configured to receive ~~the~~ cooling fluid from an ~~exterior~~ external source.

29. (Original) The device as claimed in claim 28, wherein the partitions have a plurality of connection holes provided at fixed intervals for flow of the cooling fluid introduced thereto through the lower flow passage, the middle flow passage, and the upper flow passage.

30. (Original) The device as claimed in claim 29, wherein ends of the nozzle members and the connection holes in the partitions are staggered with respect to one another.

31. (Previously Presented) The device as claimed in claim 21, wherein the at least one cooling fluid spraying unit comprises a plurality of cooling fluid spraying units, each comprising

a nozzle member configured to be interposed between respective push bars of the press unit and extending parallel thereto.

32. (Currently Amended) A device for compensating for heat generation in a modular IC test handler configured to receive cooling fluid from an exterior source and spray the cooling fluid onto modular ICs during testing, wherein the device is attached to a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame for pushing edges of modular ICs mounted on carriers to connect the modular ICs to test sockets, the device comprising:

at least one supporting member provided adjacent to the press unit and having a cooling fluid flow passage formed therein for flow of cooling fluid; and

at least one cooling fluid spraying unit configured to be supported by the at least one supporting member so as to be interposed between the plurality of push bars of the press unit and configured to spray the cooling fluid supplied through the cooling fluid flow passage toward modular ICs connected to the test sockets of the handler.

33. (Previously Presented) The device as claimed in claim 32, wherein the at least one cooling fluid spraying unit is configured to extend parallel to the push bars.

34. (Original) The device as claimed in the claim 32, wherein the at least one cooling fluid spraying unit is configured to spray the cooling fluid supplied through the cooling fluid flow passage toward faces of modular ICs in an oblique direction with respect to a planar surface formed by the at least one cooling fluid spraying unit.

35. (Currently Amended) A method for compensating for heat generation in a modular IC test handler, the method comprising:

loading modular ICs onto a press unit of a handler;

introducing cooling fluid into cooling fluid passages formed in a supporting member provided adjacent to the press unit; and

spraying cooling fluid through a plurality of apertures formed in at least one cooling fluid spraying unit ~~toward faces of the modular ICs, wherein the plurality of apertures are oriented~~ in a direction which is oblique with respect to a central plane of the at least one cooling fluid spraying unit.